



FIRST QUARTER 2006

QUARTERLY GROUNDWATER MONITORING REPORT

Sampled on February 26, 2006

Job # SP-5

LOP # 12224

April 30, 2006

Reveles Property

1503 South Main Street
Fortuna, California 95540

This *Quarterly Groundwater Monitoring Report* was prepared for Anastacio Reveles by SounPacific Environmental Services (SounPacific) using data from previous studies conducted by SounPacific and a review of relevant file at Humboldt County Division of Environmental Health (HCDEH). Reveles Property (the Site) is located at 1503 South Main Street, Fortuna, California (Figure 1).

SITE DESCRIPTION

The Site consists of a small, non-residential, single-story building with an office and a shop/garage situated in the center of the property. The area in front of the building is surfaced primarily with gravel, asphalt, and patches of concrete (Figure 2). The Site is serviced by public utilities.

SITE TOPOGRAPHY AND LAND USE

Previous grading in the southeastern portion of the property has resulted in a relatively level site that slopes gently to the west and northwest. The Site is relatively level and regional topography slopes gently to the west and northwest. The Site elevation is approximately 185 feet above mean sea level (Figure 1). The surrounding land use is predominantly residential with some commercial properties and undeveloped areas. Commercial buildings are located northwest of the Site, and some undeveloped areas are located northeast of the Site.

SITE HISTORY

Previous studies overseen by SounPacific indicated the following historical information:

1990 UST Removal (Beacom)

In a letter dated April 24, 1989, HCDEH informed Mr. Reveles that unless his UST was exempt, it must be closed under permit or operated under permit. To comply with this request, Mr. Reveles contracted Beacom Construction of Fortuna, California (Beacom) to remove the entire UST system. The UST system was removed from the Site under permit from the HCDEH in January of 1990. The UST system included two (2) 4,000-gallon unleaded gasoline USTs, one (1) 2,000-gallon waste oil UST, the underground product and vent lines, and the electrical conduit and wiring. At the time of removal, holes were observed in the USTs and a hydrocarbon odor was present in the excavation pit. HCDEH staff collected six (6) soil samples from the ends of the USTs. Of the six (6) samples collected, all six (6) samples reported concentrations of BTXE less than one part per million (ppm). Two (2) groundwater samples were collected from the excavation pits. Laboratory analytical results reported concentrations of BTXE greater than 1,000 ppb in both samples. A summary of the soil and groundwater analytical results are reported in Tables 1 and 2, respectively.

HCDEH staff filed an Unauthorized Release Form with the California Regional Water Quality Control Board-North Coast Region (NCRWQCB). In a letter dated February 28, 1990, the

NCRWQCB requested a hydrogeologic assessment to determine the threat and/or impact to groundwater.

2001 Subsurface Investigation (SounPacific)

On November 12 and 13, 2001, in accordance with the SounPacific March 5, 2001, *Subsurface Investigation Work Plan*, eight (8) soil borings (B-1 through B-8) were drilled and sampled at the Site (Figure 3). In addition to the eight (8) soil borings, temporary wells were also scheduled to be constructed in each of the boring locations. However, due to consistent drilling refusal prior to reaching groundwater in seven (7) of the eight (8) soil borings, it was only possible to install one (1) temporary well (TW-1) at soil boring location B-5 (Figure 3). This issue was discussed with HCDEH on November 13, 2001, and based on these communications an additional boring was drilled into which an additional temporary well (TW-2) was installed (Figure 3). Twenty-three soil samples were collected and analyzed, of which three (3) samples reported concentrations of TPHg. Soil analytical results indicated elevated levels of TPHg (> 50 ppm) adjacent to the USTs and dispenser islands in borings B-3 and B-6 (Table 1). Groundwater samples were collected from both temporary wells, with analytical results reporting TPHg at 33,800 ppb and 18,200 ppb for temporary wells TW-1 and TW-2 respectively. In addition elevated levels of BTXE (> 5,000 ppb), and MTBE (> 100 ppb) were reported in both groundwater samples collected (Table 2). Further investigation was necessary to delineate the groundwater contamination.

HCDEH concurred with SounPacific to prepare a work plan to conduct further subsurface investigation, including installation of monitoring wells, and to conduct a sensitive receptor survey in a letter dated November 5, 2002. HCDEH also indicated, in the same letter, that in order to evaluate the Site's potential for natural attenuation, additional biodegradation indicators would need to be monitored. SounPacific submitted a *Site Characterization Work Plan*, dated April 12, 2003, which presented monitored natural attenuation as an interim remedial alternative to monitor the hydrocarbon degradation at the Site. HCDEH did not approve this *Work Plan* and requested SounPacific to develop a site conceptual model and to expand the work plan to

investigate the source for the observed contamination in the groundwater. In a letter dated June 15, 2004, HCDEH additionally requested that the revised work plan focus on delineating contamination in soil as well as gathering information regarding the previously identified groundwater plume. SounPacific submitted a *Subsurface Investigation Work Plan Addendum*, which included the installation of monitoring wells and initiating a quarterly groundwater monitoring program in January 2005. HCDEH approved the addendum in a letter dated February 24, 2005.

2005 Subsurface Investigation (SounPacific)

On September 6, 2005, SounPacific staff performed a subsurface investigation at the Reveles site to investigate the source of the groundwater contamination and delineate the extent of the soil and groundwater contamination. All investigative work was performed in accordance with the approved SounPacific *Subsurface Investigation Work Plan Addendum (Addendum)*, dated January 20, 2004 and additional modifications approved by HCEDH. The investigation consisted of drilling three (3) onsite soil borings (MW-1, MW-2, and MW-3) for soil classification and both soil and groundwater sample collection (Figure 3). Out of twenty-four soil samples collected, one (1) sample reported concentrations of TPHd and TPHmo. Select samples were also analyzed for metals; however, all metal levels were within the normal background range. The proposed borings should have been converted into monitoring wells; however, groundwater was only encountered in borehole MW-2, with drilling refusal in the other well borings prior to encountering groundwater. As a result, MW-2 was the only borehole that was converted to a groundwater monitoring well.

Due to the initial problems, on September 7, 2005, three (3) step-out borings (SB-1 through SB-3) were drilled in an additional attempt to investigate the groundwater depth at the Reveles Site (Figure 3). These step-out borings were drilled down to depths of approximately thirty feet bgs. The drillings were discontinued due to drill refusal caused by extremely rocky condition in the subsurface. No groundwater was encountered in any of the step-out borings.

RESULTS OF QUARTERLY SAMPLING

A quarterly groundwater monitoring program was implemented by SounPacific on December 9, 2005, and will continue until further notice. SounPacific staff is currently conducting quarterly groundwater sampling events to monitor hydrocarbon concentrations onsite, and collecting quarterly water level data to document any changes in groundwater levels. Monitoring wells were gauged and sampled on December 9, 2005.

FIELD DATA

Wells gauged: MW-2
Groundwater: Depth to Water 5.92 feet below top of casing
Groundwater Elevation: Groundwater Elevation 180.81 feet above mean sea level
Floating Product: None

On February 26, 2006, the depth to groundwater in the Site's monitoring well was 5.92 feet below top of casing (btoc). When corrected to mean sea level, the water level elevation was 180.81 feet above mean sea level (amsl) in MW-2. Groundwater levels for the February 26, 2006 monitoring event, along with historical level and elevations are included in Table 3. Prior to sampling, the well was purged; the groundwater field purging parameters are presented below.

MONITORING WELL MW-2 GROUNDWATER FIELD PARAMETERS

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm)⁻¹
3:25 pm	0	5.07	54.42	0.089
3:29	1	5.16	54.05	0.074
3:33	2	5.16	54.18	0.073
3:39	3	5.23	54.14	0.072

ANALYTICAL RESULTS

Sampling locations: MW-2

Analyses performed: TPHg, TPHd, TPHmo, full list VOC by 8260, CAM-5 metals

Laboratories Used: Basic Labs, Redding, California (Cert #1677)

On February 26, 2006, the single onsite monitoring well was sampled for laboratory analysis. The analytical results for the current monitoring event are presented below and graphically depicted in Figure 4. The laboratory report is included as Appendix A. The historical analytical results for all monitoring wells, since the implementation of groundwater monitoring are included as Table 4.

	<u>MW-2</u> (ppb)
TPHg:	ND < 50
Benzene:	ND < 0.5
Toluene:	ND < 0.5
Xylenes:	ND < 1.5
Ethylbenzene:	ND < 0.5
MTBE:	ND < 1.0
DIPE:	ND < 0.5
TAME:	ND < 5.0
ETBE:	ND < 5.0
TBA:	ND < 50.0
TPHd:	ND < 50
TPHmo:	113

(ND= non-detectable)

COMMENTS AND RECOMMENDATIONS

On February 26, 2006, the 2nd groundwater monitoring event for the onsite monitoring well was conducted at the Reveles Property at 1503 South Main Street in Fortuna, California. A summary of the results are presented below.

- The depth to groundwater in the onsite well was 5.92 feet btoc (MW-2). When corrected to sea level, the water level elevation was 180.81 feet above mean sea level (amsl).
- The groundwater sample from the Site's single well was collected and analyzed for TPHg, TPHd, TPHmo, Volatile Organic Compounds (VOC) full list 8260, and CAM-5 metals. TPHmo was reported at a concentration of 113 ppb. Chromium was reported at a concentration of 43 ppb. Lead was reported at a concentration of 28 ppb. Nickel was reported at a concentration of 46 ppb. Zinc was reported at a concentration of 445 ppb. No other constituents were reported at or above the reporting limits.

Based on the results of the February 2006 monitoring event the following future activities are proposed.

- Groundwater monitoring will be continued for a minimum of one year. Groundwater level measurements will be collected from the onsite monitoring well. Groundwater sampling and analysis will be conducted from the onsite well. Based upon the analytical results of the initial two monitoring events, SounPacific proposed that the full list VOC 8260 and the CAM-5 metals be eliminated from the sampling suite. The collected groundwater samples from the single well will be analyzed for TPHg, BTXE, TPHd, and TPHmo.
- SounPacific is currently preparing a work plan for the installation of four additional monitoring wells at the Reveles Property, as approved by HCDEH in the correspondence dated February 16, 2006.

CERTIFICATION

This report was prepared under the direct supervision of a California registered geologist at SounPacific. All information provided in this report including statements, conclusions and recommendations are based solely upon field observations and analyses performed by a state-certified laboratory. SounPacific is not responsible for laboratory errors.

SounPacific promises to perform all its work in a manner that is currently used by members in similar professions working in the same geographic area. SounPacific will do what ever is reasonable to ensure that data collection is accurate. Please note however, that rain, buried utilities, and other factors can influence groundwater depths, directions and other factors beyond what SounPacific could reasonably determine.

SounPacific

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ATTACHMENTS

TABLES & CHART

Table 1: Soil Analytical Results

Table 2: Groundwater Analytical Results

Table 3: Water Levels

Table 4: Groundwater Analytical Results from Monitoring Wells

Chart 1: Hydrograph

FIGURES

Figure 1: Aerial/Topo Map

Figure 2: Site Plan

Figure 3: Sample Location Map

Figure 4: Groundwater Analytical Results

APPENDICES

Appendix A: Laboratory Report and Chain-of-Custody Form

Appendix B: Standard Operating Procedures

Appendix C: Field Notes

Tables & Chart

Table 1
Soil Analytical Results
Reveles Property
1503 South Main Street
Fortuna, California 95540

Sample ID	Sample Location	Sample Date	TPHg (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	MTBE (ppm)	DIPE (ppm)	TAME (ppm)	ETBE (ppm)	TBA (ppm)	DBE (ppm)	DCE (ppm)	TPHC/oil & grease (ppm)	TPHC/ gasoline (ppm)	TPHC/ diesel (ppm)
#1 East	Waste Oil UST Pit	1/10/1990	----	ND < 0.050	0.060	ND < 0.050	ND < 0.05	----	----	----	----	----	----	----	ND < 250	ND < 1	ND < 1
#1 West	Waste Oil UST Pit	1/10/1990	----	ND < 0.050	0.070	ND < 0.050	ND < 0.05	----	----	----	----	----	----	----	ND < 250	ND < 1	ND < 1
#2 South	Gas Oil UST Pit	1/10/1990	----	ND < 0.050	0.14	ND < 0.050	0.060	----	----	----	----	----	----	----	----	ND < 1	----
#2 North	Gas UST Pit	1/10/1990	----	ND < 0.050	0.25	ND < 0.050	0.080	----	----	----	----	----	----	----	----	ND < 1	----
#3 South	Gas UST Pit	1/10/1990	----	ND < 0.050	0.16	ND < 0.050	0.070	----	----	----	----	----	----	----	----	ND < 1	----
#3 North	Gas UST Pit	1/10/1990	----	ND < 0.050	0.14	ND < 0.050	0.080	----	----	----	----	----	----	----	----	ND < 1	----
SP-5 B-1 @ 5'	B-1	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-1 @ 10'	B-1	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-1 @ 15'	B-1	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-2 @ 5'	B-2	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-2 @ 10'	B-2	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-2 @ 15'	B-2	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-3 @ 5'	B-3	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-3 @ 10'	B-3	11/12/2001	56.3	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-3 @ 15'	B-3	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-4 @ 5'	B-4	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-4 @ 10'	B-4	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-5 @ 5'	B-5	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-5 @ 10'	B-5	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-5 @ 15'	B-5	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-6 @ 5'	B-6	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-6 @ 10'	B-6	11/12/2001	103	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-6 @ 15'	B-6	11/12/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-7 @ 5'	B-7	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-7 @ 10'	B-7	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-7 @ 10' L	B-7	11/13/2001	0.505	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-7 @ 15'	B-7	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-8 @ 5'	B-8	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----
SP-5 B-8 @ 10'	B-8	11/13/2001	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----

Table 1 (cont.)
Soil Analytical Results
 Reveles Property
 1503 South Main Street
 Fortuna, California 95540

Sample ID	Sample Location	Sample Date	TPHg (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	MTBE (ppm)	DIPE (ppm)	TAME (ppm)	ETBE (ppm)	TBA (ppm)	TPHd (ppm)	TPHmo (ppm)	Cadmium (ppm)	Chromium (ppm)	Lead (ppm)	Nickel (ppm)	Zinc (ppm)
MW-1 @ 4'	MW-1	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	61	ND < 10	71	56
MW-1 @ 8'	MW-1	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	68	ND < 10	60	50
MW-1 @ 12'	MW-1	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	51	ND < 10	69	53
MW-1 @ 16'	MW-1	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	41	ND < 10	60	47
MW-1 @ 19'	MW-1	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	67	ND < 10	68	56
MW-1 @ 23'	MW-1	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	68	ND < 10	69	53
MW-1 @ 25'	MW-1	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	60	11	75	67
MW-1 @ 30'	MW-1	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	76	ND < 10	91	56
MW-1 @ 36'	MW-1	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	62	ND < 10	72	63
MW-2 @ 4'	MW-2	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	54	ND < 10	36	45
MW-2 @ 7'	MW-2	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	50	ND < 10	43	43
MW-2 @ 11'	MW-2	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	41	ND < 10	62	50
MW-2 @ 15'	MW-2	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	75	ND < 10	71	53
MW-2 @ 19'	MW-2	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	55	ND < 10	68	58
MW-2 @ 24'	MW-2	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	48	ND < 10	65	57
MW-2 @ 28'	MW-2	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	53	ND < 10	64	62
MW-3 @ 4'	MW-3	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	59	12	60	56
MW-3 @ 8'	MW-3	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	1.6	16	ND < 2.0	54	ND < 10	60	55
MW-3 @ 12'	MW-3	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	58	ND < 10	74	56
MW-3 @ 16'	MW-3	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	65	ND < 10	75	60
MW-3 @ 20'	MW-3	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	63	ND < 10	70	58
MW-3 @ 24'	MW-3	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	62	ND < 10	61	52
MW-3 @ 28'	MW-3	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	54	10	69	56
MW-3 @ 35'	MW-3	9/6/2005	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0150	ND < 0.025	ND < 0.020	ND < 0.020	ND < 0.020	ND < 0.50	ND < 1.0	ND < 10	ND < 2.0	51	ND < 10	76	59

Notes:

TPHg: Total petroleum hydrocarbons as gasoline.

MTBE: Methyl tertiary butyl ether

DIPE: Diisopropyl Ether

TAME: Tertiary amyl methyl ether

ETBE: Ethyl tertiary butyl ether

TPHd: Total petroleum hydrocarbons as diesel

TPHmo: Total petroleum hydrocarbon as motor oil

DBE: 1,2-Dibromoethane

DCE: 1,2-Dichloroethane

TBA: Tertiary butanol

TPHC: Total Petroleum Hydrocarbons

ppm: parts per million = µg/g = mg/kg = 1000 µg/kg

ND: Not detected: Sample was detected at or below the method detection limit as shown.

Table 2
Groundwater Analytical Results
 Reveles Property
 1503 South Main Street
 Fortuna, California 95540

Sample ID	Sample Location	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	DBE (ppb)	DCE (ppb)	TPHC/ Gas (ppb)	TPHC/ Gas (IR) (ppb)	TPHd (ppb)	TPHmo (ppb)	Cd (ppb)	Ch (ppb)	Pb (ppb)	Ni (ppb)	Zn (ppb)
#1 Water	Waste Oil UST Pit	1/10/1990	----	490	970	ND < 100	570	----	----	----	----	----	----	----	----	ND < 1	----	----	----	----	----	----	----
#2,3 Water	Gas UST Pit	1/10/1990	----	320	640	240	820	----	----	----	----	----	----	----	20,000	----	----	----	----	----	----	----	----
TempW-1	TW-1	12/13/2001	33,800	638	4,700	899	5,660	301	ND < 50	162	ND < 10,000	ND < 100	ND < 50	ND < 50	----	----	----	----	----	----	----	----	----
TempW-2	TW-2	12/13/2001	18,200	182	2,800	239	2,060	122	ND < 0.5	46.8	ND < 0.5	ND < 100	4.6	ND < 0.5	----	----	----	----	----	----	----	----	----

Notes:

TPHg: Total petroleum hydrocarbons as gasoline.

MTBE: Methyl tertiary butyl ether

DIPE: Diisopropyl ether

TAME: Tertiary amyl methyl ether

ETBE: Ethyl tertiary butyl ether

TPHC: Total petroleum hydrocarbons.

TPHd: Total petroleum hydrocarbon as diesel

TPHmo: Total petroleum hydrocarbon as motor oil

DBE: 1,2-Dibromoethane

DCE: 1,2-Dichloroethane

TBA: Tertiary butanol

ppb: parts per billion = µg/l = .001 mg/l = 0.001 ppm.

ND: Not detected at or below the method detection limit as shown.

IR: Infrared

Table 3
Water Levels
 Reveles Property
 1503 South Main Street
 Fortuna, California 95540

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-2	9/6/2005	13.46	186.73	6.60	180.13
	12/9/2005	12.11	186.73	4.40	182.33
	2/26/2006	12.15	186.73	5.92	180.81

Table 4
Groundwater Analytical Results from Monitoring Wells
 Reveles Property
 1503 South Main Street
 Fortuna, California 95540

Sample Location	Sampling Event	Annual Quarter	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	TPHd (ppb)	TPHmo (ppb)	Cd (ppb)	Cr (ppb)	Pb (ppb)	Ni (ppb)	Zn (ppb)
MW-2	Well Installation	3rd Quarter	9/6/2005	ND < 50	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 1.0	ND < 1.0	ND < 1.0	ND < 1.0	ND < 10	54	ND < 170	ND < 10	300	36	390	400
	First Quarterly	4th Quarter	12/9/2005	ND < 50	ND < 0.3	ND < 0.3	ND < 0.6	ND < 0.3	ND < 1.0	ND < 0.5	ND < 1.0	ND < 5.0	ND < 100	ND < 50	156	ND < 5.0	75	ND < 15	82	94
	Second Quarterly	1st Quarter	2/26/2006	ND < 50	ND < 0.5	ND < 0.5	ND < 1.5	ND < 0.5	ND < 1.0	ND < 0.5	ND < 5.0	ND < 5.0	ND < 50.0	ND < 50	113	ND < 5.0	43	28	46	445

Notes:

TPHg: Total petroleum hydrocarbons as gasoline

MTBE: Methyl tertiary butyl ether

DIPE: Diisopropyl Ether

TAME: Tertiary amyl methyl ether

TBA: Tertiary butanol

ETBE: Ethyl tertiary butyl ether

ppb: parts per billion = $\mu\text{g/l} = .001 \text{ mg/l} = 0.001 \text{ ppm}$.

ND: Not detected. Sample was detected at or below the method detection limit as shown.

Cd: Cadmium

Cr: Chromium

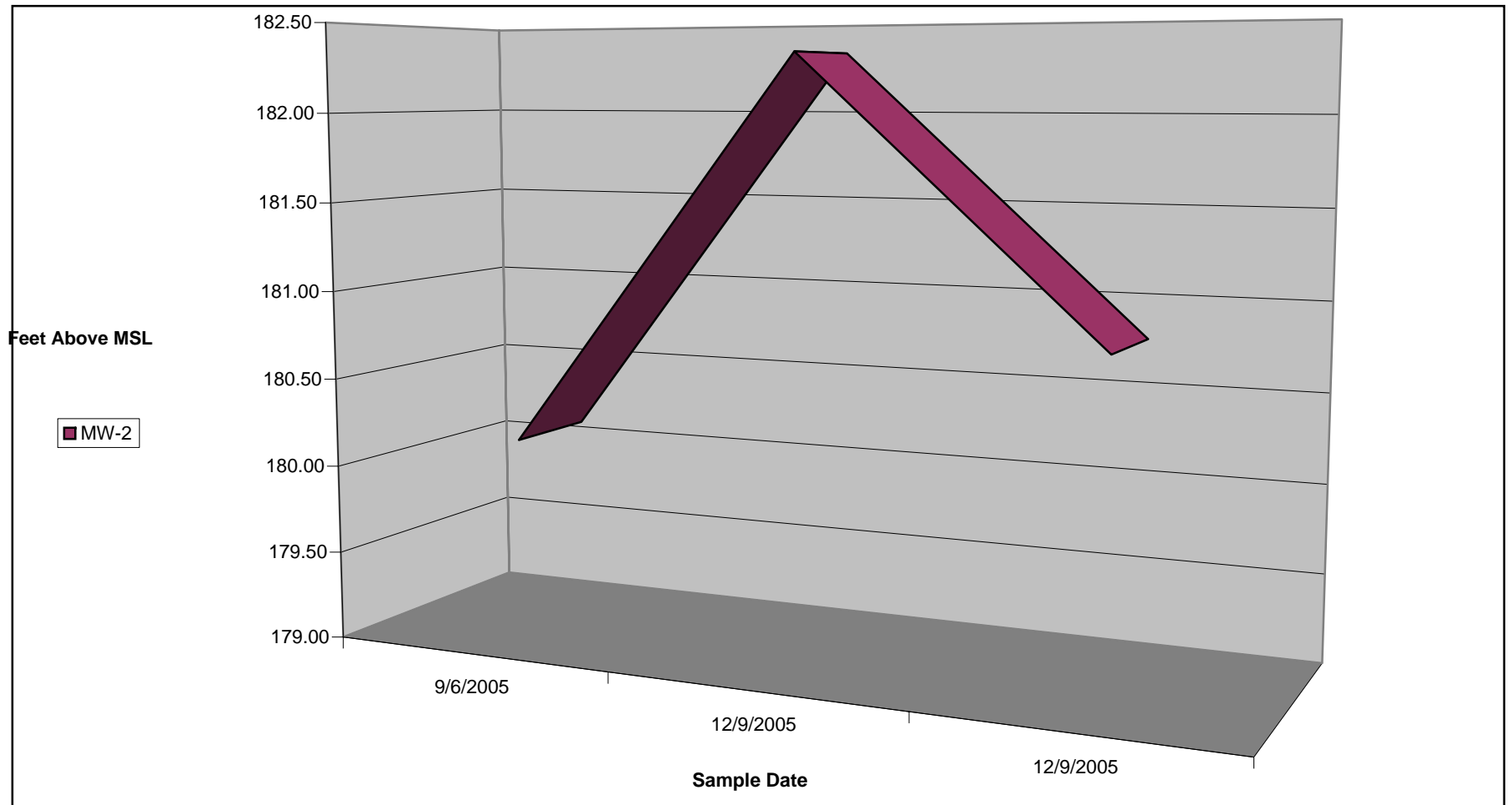
Pb: Lead

Ni: Nickel

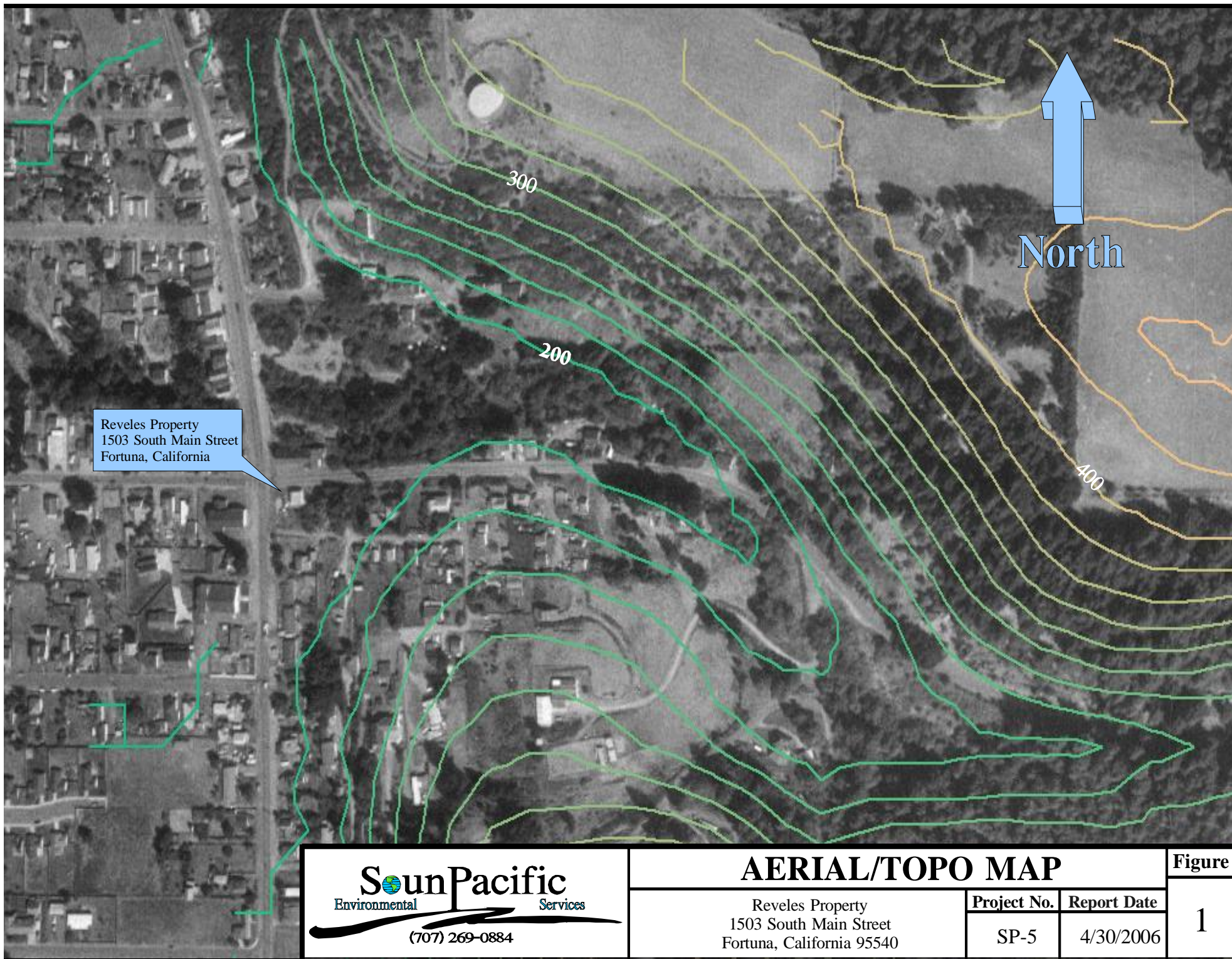
Zn: Zinc


* Analytical results for Volatile Organic Compounds were reported below laboratory detection limits with one exception. Sec-Butylbenzene was detected at a concentration of 0.7 ppb in well MW-2 on 12/19/05.

Chart 1
Hydrograph
Broadway 76
1330 Broadway
Eureka, California 95501



Figures



 Soun Pacific Environmental Services (707) 269-0884	AERIAL/TOPO MAP		Figure
	Reveles Property 1503 South Main Street Fortuna, California 95540	Project No.	Report Date
		SP-5	4/30/2006
			1

NORTH

MILL STREET

PL

MW-2

Previous Dispensers

GARAGE / SHOP

Previous Vent Lines

SOUTH MAIN STREET

PL

Toe of Slope

Previous 2,000-gallon
Waste Oil UST Location

Previous 4,000-gallon
Gasoline UST Locations

LEGEND

Water Line Underground

Overhead Electric Lines



Monitoring Well

0 20 40

APPROXIMATE SCALE IN FEET



SITE PLAN

Reveles Property
1503 South Main Street
Fortuna, California 95540

Project No.

SP-5

Report Date

4/30/06

Figure

2

NORTH

MILL STREET

PL

SOUTH MAIN STREET

MW-2

B-8

B-5 and TW-1

B-6

B-7

Shop

TW-2

B-4

SB-3

SB-2

SB-1

MW-1

B-3

B-2


B-1

PL

MW-3

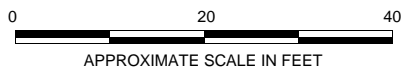
LEGEND

B-1  Soil Boring (Drilled 11/01)

TW-1  Temporary Well
(Installed 11/01 & 12/01)

MW-1  Soil Boring (Drilled 9/05)

MW-2  Monitoring Well



SAMPLE LOCATION MAP

Reveles Property
1503 South Main Street
Fortuna, California 95540

Project No.

SP-5

Report Date

4/30/06

Figure

3

NORTH

MILL STREET

PL

Groundwater Results MW-2		
Cr	43	ppb
Pb	28	ppb
Ni	46	ppb
Zn	445	ppb
TPHmo	113	ppb

SOUTH MAIN STREET

PL

LEGEND

MW-2



Monitoring Well

0 20 40

APPROXIMATE SCALE IN FEET



GROUNDWATER ANALYTICAL RESULTS

Reveles Property
1503 South Main Street
Fortuna, California 95540

Project No.

SP-5

Report Date

4/30/06

Figure

4

Appendices

Appendix A



www.basiclab.com

voice 530.243.7234 2218 Railroad Avenue
fax 530.243.7494 Redding, California 96001

March 17, 2006

Lab ID: 6030091

Andy Malone
SOUNPACIFIC
4612 GREENWOOD HEIGHTS DR
KNEELAND, CA 95549
RE: REVELES SP-5

Dear Andy Malone,

Enclosed are the analysis results for Work Order number 6030091. All analysis were performed under strict adherence to our established Quality Assurance Plan. Any abnormalities are listed in the qualifier section of this report.

If you have any questions regarding these results, please feel free to contact us at any time. We appreciate the opportunity to service your environmental testing needs.

Sincerely,

Ricky Jensen
For

Ricky Jensen

Ricky D. Jensen
Laboratory Director
California ELAP Certification Number 1677



www.basiclab.com

voice 530.243.7234 2218 Railroad Avenue
fax 530.243.7494 Redding, California 96001

Report To: SOUNPACIFIC
4612 GREENWOOD HEIGHTS DR
KNEELAND, CA 95549

Attention: Andy Malone
Project: REVELES SP-5

Description: MW-2

Matrix: Water

Lab ID: 6030091-01

Lab No: 6030091
Reported: 03/17/06
Phone: 707-269-0884
P.O. #

Sampled: 02/26/06 00:00

Received: 03/02/06 11:22

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Cadmium	ug/l	ND	J		5.0	EPA 6010A	03/09/06	03/08/06	B6C0224
Chromium	"	43			5	"	03/10/06	"	B6C0266
Lead	"	28			15	"	03/09/06	"	B6C0224
Nickel	"	46			10	"	"	"	"
Zinc	"	445			10	"	"	"	"

Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Acetone	ug/l	ND			5.0	EPA 8260	03/03/06	03/03/06	B6C0148
Acetonitrile	"	ND			5.0	"	"	"	"
Acrylonitrile	"	ND			5.0	"	"	"	"
Allyl chloride	"	ND			5.0	"	"	"	"
Benzene	"	ND			0.5	"	"	"	"
Bromobenzene	"	ND			0.5	"	"	"	"
Bromochloromethane	"	ND			0.5	"	"	"	"
Bromodichloromethane	"	ND			0.5	"	"	"	"
Bromoform	"	ND			0.5	"	"	"	"
Bromomethane	"	ND			1.0	"	"	"	"
2-Butanone	"	ND			5.0	"	"	"	"
n-Butylbenzene	"	ND			0.5	"	"	"	"
sec-Butylbenzene	"	ND			0.5	"	"	"	"
tert-Butylbenzene	"	ND			0.5	"	"	"	"
Carbon disulfide	"	ND			0.5	"	"	"	"
Carbon tetrachloride	"	ND			0.5	"	"	"	"
Chlorobenzene	"	ND			0.5	"	"	"	"
Chloroethane	"	ND			0.5	"	"	"	"
2-Chloroethylvinyl ether	"	ND			1.0	"	"	"	"
Chloroform	"	ND			0.5	"	"	"	"
Chloromethane	"	ND			0.5	"	"	"	"
Chloroprene	"	ND			5.0	"	"	"	"
2-Chlorotoluene	"	ND			0.5	"	"	"	"
4-Chlorotoluene	"	ND			0.5	"	"	"	"
Dibromochloromethane	"	ND			0.5	"	"	"	"
1,2-Dibromo-3-chloropropane (DBCP)	"	ND			0.5	"	"	"	"
1,2-Dibromoethane (EDB)	"	ND			1.0	"	"	"	"
Dibromomethane	"	ND			0.5	"	"	"	"
1,2-Dichlorobenzene	"	ND			0.5	"	"	"	"
1,3-Dichlorobenzene	"	ND			0.5	"	"	"	"
1,4-Dichlorobenzene	"	ND			0.5	"	"	"	"
Dichlorodifluoromethane	"	ND			0.5	"	"	"	"
1,1-Dichloroethane	"	ND			0.5	"	"	"	"
1,2-Dichloroethane	"	ND			0.5	"	"	"	"
1,1-Dichloroethene	"	ND			0.5	"	"	"	"
cis-1,2-Dichloroethene	"	ND			0.5	"	"	"	"
trans-1,2-Dichloroethene	"	ND			0.5	"	"	"	"

Ricky Jensen

Approved By

Basic Laboratory, Inc.
California D.O.H.S. Cert #1677



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laboratory

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voice 530.243.7234 2218 Railroad Avenue
fax 530.243.7494 Redding, California 96001

Report To: SOUNPACIFIC
4612 GREENWOOD HEIGHTS DR
KNEELAND, CA 95549

Attention: Andy Malone
Project: REVELES SP-5

Description: MW-2

Matrix: Water

Lab ID: 6030091-01

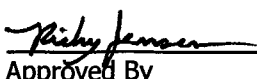
Lab No: 6030091
Reported: 03/17/06
Phone: 707-269-0884
P.O. #

Sampled: 02/26/06 00:00

Received: 03/02/06 11:22

Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
1,2-Dichloropropane	"	ND			0.5	"	"	03/03/06	"
1,3-Dichloropropane	"	ND			0.5	"	"	"	"
2,2-Dichloropropane	"	ND			0.5	"	"	"	"
1,1-Dichloropropene	"	ND			0.5	"	"	"	"
cis-1,3-Dichloropropene	"	ND			0.5	"	"	"	"
trans-1,3-Dichloropropene	"	ND			0.5	"	"	"	"
1,4-Dioxane	"	ND			10.0	"	"	"	"
Ethylbenzene	"	ND			0.5	"	"	"	"
Ethyl tert-butyl ether	"	ND			5.0	"	"	"	"
Hexachlorobutadiene	"	ND			0.5	"	"	"	"
2-Hexanone	"	ND			2.0	"	"	"	"
Isobutanol	"	ND			5.0	"	"	"	"
Isopropylbenzene	"	ND			0.5	"	"	"	"
Di-isopropyl ether	"	ND			0.5	"	"	"	"
p-Isopropyltoluene	"	ND			0.5	"	"	"	"
4-Methyl-2-pentanone	"	ND			1.0	"	"	"	"
Methacrylonitrile	"	ND			5.0	"	"	"	"
Dichloromethane	"	ND			2.0	"	"	"	"
Methyl methacrylate	"	ND			5.0	"	"	"	"
Methyl tert-butyl ether	"	ND			1.0	"	"	"	"
Naphthalene	"	ND			0.5	"	"	"	"
Propionitrile	"	ND			5.0	"	"	"	"
n-Propylbenzene	"	ND			0.5	"	"	"	"
Styrene	"	ND			0.5	"	"	"	"
Tert-amyl methyl ether	"	ND			5.0	"	"	"	"
1,1,1,2-Tetrachloroethane	"	ND			0.5	"	"	"	"
1,1,2,2-Tetrachloroethane	"	ND			0.5	"	"	"	"
Tetrachloroethene	"	ND			0.5	"	"	"	"
Tetrahydrofuran	"	ND			5.0	"	"	"	"
Tert-butyl alcohol	"	ND			50.0	"	"	"	"
Toluene	"	ND			0.5	"	"	"	"
1,2,3-Trichlorobenzene	"	ND			0.5	"	"	"	"
1,2,4-Trichlorobenzene	"	ND			0.5	"	"	"	"
1,1,1-Trichloroethane	"	ND			0.5	"	"	"	"
1,1,2-Trichloroethane	"	ND			0.5	"	"	"	"
Trichloroethene	"	ND			0.5	"	"	"	"
Trichlorotrifluoroethane	"	ND			5.0	"	"	"	"
Trichlorofluoromethane	"	ND			2.0	"	"	"	"
1,2,3-Trichloropropane	"	ND			1.0	"	"	"	"
1,2,4-Trimethylbenzene	"	ND			0.5	"	"	"	"
1,3,5-Trimethylbenzene	"	ND			0.5	"	"	"	"
Vinyl acetate	"	ND			5.0	"	"	"	"
Vinyl chloride	"	ND			0.5	"	"	"	"
m,p-Xylene	"	ND			1.0	"	"	"	"
o-Xylene	"	ND			0.5	"	"	"	"
Xylenes (total)	"	ND			1.5	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4		101 %		28-145		"	"	"	"


Approved By

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California D.O.H.S. Cert #1677



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Report To: SOUNPACIFIC
4612 GREENWOOD HEIGHTS DR
KNEELAND, CA 95549

Attention: Andy Malone
Project: REVELES SP-5

Description: MW-2

Matrix: Water

Lab ID: 6030091-01

Lab No: 6030091
Reported: 03/17/06
Phone: 707-269-0884
P.O. #

Sampled: 02/26/06 00:00

Received: 03/02/06 11:22

Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Surrogate: Toluene-d8		99.0 %		52-150		"	"	03/03/06	"
Surrogate: 4-Bromofluorobenzene		98.8 %		43-155		"	"	"	"

TPH Gasoline Range Organics

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	ND			50.0	EPA 8015/8260	03/03/06	"	B6C0148
Surrogate: 4-Bromofluorobenzene		98.8 %		43-155		"	"	"	"

TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	ND			50	EPA 8015 MOD	03/15/06	03/02/06	B6C0081
Motor Oil	"	113			50	"	"	"	"
Surrogate: Octacosane		119 %		50-150		"	"	"	"

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maximum Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure



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Appendix B



Standard Operating Procedures

Groundwater Level Measurements and Free Phase Hydrocarbon Measurements

All SounPacific staff and contractors shall adopt the following procedures any time that groundwater elevations are determined for the purposes of establishing groundwater gradient and direction, and prior to any sampling event.

Wells are to be tested for free phase hydrocarbons (free product) before the first development or sampling of any new well, and in any well that has historically contained free product.

Equipment Checklist

- ☐ Combination water level / free phase hydrocarbon indicator probe (probe)
- ☐ Gauging Data / Purge Calculations Sheet
- ☐ Pencil or Pen/sharpie
- ☐ Disposable Gloves
- ☐ Distilled Water and or know water source on site that is clean
- ☐ Alconox (powder) or Liquinox (liquid) non-phosphate cleaners—do not use soap!
- ☐ Buckets or Tubs for decontamination station
- ☐ Tools necessary to access wells
- ☐ Site Safety Plan
- ☐ This Standard Operating Procedure
- ☐ Notify Job site business that you will be arriving to conduct work.

Procedure

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.
2. Access and open all monitoring wells to be measured. Allow wells to equilibrate for approximately 15 minutes before taking any measurements.

3. Decontaminate probe with Alconox or Liquinox solution, and rinse with distilled water.
4. Determine the diameter of the well to be measured and indicate this on the Gauging Data / Purge Calculations Sheet.
5. Words of caution: Please be careful with water level and product meters probes are not attached with high strength material so please make sure to avoid catching the end on anything in the well and make sure not to wind reel to the point that it could pull on the probe. ***If product is suspect in a well, go to step 6, if no product is suspected go to step 7 below.***
6. **When product is present or suspected:** use the product level meter. Clip the static charge clamp to the side of the well casing. Then lower probe into the well through the product/water interface about one foot if possible. Then slowly raise the probe back up through the product/water interface layer and record the level as the tone changes from solid to broken-record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTP). Continue to raise the probe up through the product until the tone stops completely-record this level on the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW). Then go to step 8.
7. **When no product is present or suspected:** If no free product is present, record the depth of the water (to the nearest 0.01 foot) relative to the painted black mark on the top of the well casing. Leave the probe in the well just a hair above the water level to ensure the well as equilibrated. As the well rises, the tone will sound. Make sure no increase in water levels have occurred in over a ten-minute period. Water levels can lower as well as rise. Make sure you note when the level you keep lowering the probe to has remained stable for at least ten minutes. Once this has been accomplished, please record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW).
8. Turn off the probe, and use the probe to determine the depth to the bottom of the well relative to the top of the well casing. This is the depth to bottom measurement (DTB).
9. Decontaminate probe and tape by washing in an Alconox/Liquinox solution (***read directions on solution for ratio of water to cleanser***) and use the toothbrush provided to remove any foreign substance from the probe and tape. Then triple rinse probe and tape with clean water and then proceed to take measurements in the next well.
10. If sampling is to occur, proceed to implement SounPacific's Standard Operating Procedure for Monitoring Well Purging and Sampling. If no sampling is to be performed, close and secure all wells and caps.



Standard Operating Procedures

Monitoring Well Purging and Groundwater Sampling

All SounPacific employees and contractors shall adopt the following procedures any time that groundwater samples are to be taken from an existing groundwater monitoring well.

Prior to the implementation of these procedures, the groundwater level **MUST** be measured and the presence of free phase hydrocarbons determined in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

Equipment Checklist

- ☐ **Gauging Data / Purge Calculations Sheet used for water level determination**
- ☐ Chain of Custody Form
- ☐ pH/ Conductivity / Temperature meter
- ☐ Pencil or Pen
- ☐ Indelible Marker
- ☐ Calculator
- ☐ Disposable Gloves
- ☐ Distilled Water
- ☐ Alconox/liquinox liquid or powdered non-phosphate cleaner
- ☐ Buckets or Tubs for decontamination station
- ☐ Bottom-filling bailer or pumping device for purging
- ☐ Disposable bottom-filling bailer and emptying device for sampling
- ☐ String, twine or fishing line for bailers
- ☐ Sample containers appropriate for intended analytical method (check with lab)
- ☐ Sample labels
- ☐ Site Safety Plan
- ☐ Tools necessary to access wells
- ☐ Drum space on site adequate for sampling event

Procedure

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.
2. Measure groundwater levels and check for the presence of free product in accordance with the Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

Purging

3. Calculate and record the volume of standing water in each well using the information provided on the Gauging Data / Purge Calculations sheet.
 $(DTB-DTW) \times \text{Conversion Factor} = \text{Casing Volume}$.
4. The purge volume shall be at least three times and no more than seven times the volume of standing water (the casing volume).
5. Purge the well by bailing or pumping water from the well into a calibrated receptacle, such as a five gallon bucket or tub with markings to indicate one gallon increments. Collect purgeate in a 55 gallon labeled drum and store on site. Drum labels should include the date, contents, site number, and SounPacific's name and telephone number.
6. Take measurements of pH, conductivity, temperature, and visual observations to verify the stabilization of these parameters. At least five measurements of these parameters should be made throughout the purging process. The parameters shall be considered stabilized if successive measurements vary by less than 0.25 pH units, 10% of conductivity in μS , and 1°C (or 1.8°F). Continue purging until at least three times the casing volume has been removed, and the measured parameters have stabilized as indicated above. Do not exceed seven casing volumes.
7. Take a final depth to groundwater measurement and calculate the casing volume of the recharged well. Ideally, the casing volume should have recharged to at least 80% of the original measured casing volume before sampling commences. If due to slow recharge rates it is not feasible to wait for the well to fully recharge, then note this on the Gauging Data / Purge Calculation Sheet and proceed to sample following the procedure below.

Sampling

8. **After completing groundwater measurement, and checking for free product if necessary, in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements, and after purging monitoring wells as described above, groundwater samples may be collected.**
9. Slowly lower a clean, previously unused disposable bailer into the well water approximately half of the bailer length, and allow the bailer to slowly fill.
10. Withdraw the full bailer from the monitoring well and utilize the included (clean and unused) bottom-emptying device to fill the necessary sample containers, and seal the container with the included PTFE (Teflon) lined cap.
11. When filling VOAs, fill the VOA completely full, with the meniscus rising above the rim of the bottle. Carefully cap the VOA and invert it and gently tap it to determine whether air bubbles are trapped inside. If the VOA contains air bubbles, refill the VOA and repeat this step.
12. All samples shall be labeled with the Sample ID, the Sample Date, and the Sample Location or Project Number. Use an indelible marker for writing on sample labels.
13. Record all pertinent sample data on the Chain of Custody.
14. Place samples in an ice chest cooled to 4°C with ice or "blue ice". Bottles should be wrapped in bubble wrap, and VOA's should be inserted in a foam VOA holder to protect against breakage. Samples are to be kept at 4°C until delivered to the laboratory. Any transference of sample custody shall be indicated on the Chain of Custody with the appropriate signatures as necessary.
15. Utilize clean, previously unused gloves, bailer and line, and bottom-emptying device for each well sampled.
16. When finished with all sampling, close and secure all monitoring wells.
17. Leave the site cleaner than when you arrived and drive safely.

Appendix C

GAUGING DATA/PURGE CALCULATIONS

Job Site: RevelesJob No.: SP-5Event: 2nd Quarterly SamplingDate: 2-26-06

Soun Pacific
Environmental Services
(707) 269-0884

WELL NO.	DIA. (in.)	DTB (ft.)	DTW (ft.)	ST (ft.)	CV (gal.)	PV (gal.)	SPL (ft.)	Bailer Loads	Notes
MW-2	2	12.15	5.92	6.23	1	3			None.

Explanation:

DIA = Well Diameter
DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW)
CV = Casing Volume (ST x cf)
PV = Purge Volume (standard 3 x CV, well development 10 x CV)
SPL = Thickness of Separate Phase Liquid

Conversion Factors (cf):

2 in. dia. well cf = 0.16 gal./ft.
4 in. dia. well cf = 0.65 gal./ft.
6 in. dia. well cf = 1.44 gal./ft.

Sampler: _____

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Well Gauging/Sampling Report

Sheet 1 of 1

Date: <u>2-26-06</u>	Project Name: <u>Reveles'</u>	Project No: <u>SP-5</u>	Well Number: <u>MW-2</u>			
Analyses Tested: <u>TPHg, BTxE, S-Oxys, TPHd, TPHmd</u>						
Sample Containers: <u>3 VOAs (HUL) 2 HiTex Bottles</u>						
Purge Technique:		<input checked="" type="checkbox"/> Bailor <input type="checkbox"/> Pump				
Sounding Used:		<input type="checkbox"/> Water Meter <input checked="" type="checkbox"/> Interface Meter				
Water & Free Product Levels						
Time	Depth to Water	Depth to Product	Notes			
3:10 pm	5.93 ft		No Green			
3:18	5.92					
End						
Field Measurements						
Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (mc/cm)	DO (mg/L)	DO (%)
3:25	0	5.07	54.42	0.089	3.07	28.8
3:29	1	5.16	54.05	0.0764	2.98	27.7
3:33	2	5.16	54.18	0.073	2.65	24.8
3:39	3	5.23	54.14	0.072	2.15	20.1
<div style="text-align: right; margin-right: 50px;"> Field Scientist: <u>Tien-yu Tai</u> </div>						